

TISA Working Group Report

CERES TISA Sublead: D. Doelling

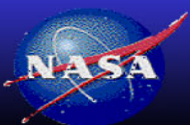
TISA: A. Gopalan, E. Kizer, C. Nguyen, M. Nordeen, M. Sun, J. Wilkins, F. Wrenn

GEO calibration: R. Bhatt, C. Haney, B. Scarino

Sub-setter: C. Mitrescu, P. Mlynczak, C. Chu, E. Heckert

CERES Science Team Meeting

Pearl Young Theater, Building 2102, NASA Langley Research Center,
Hampton, VA, May 7-9, 2019



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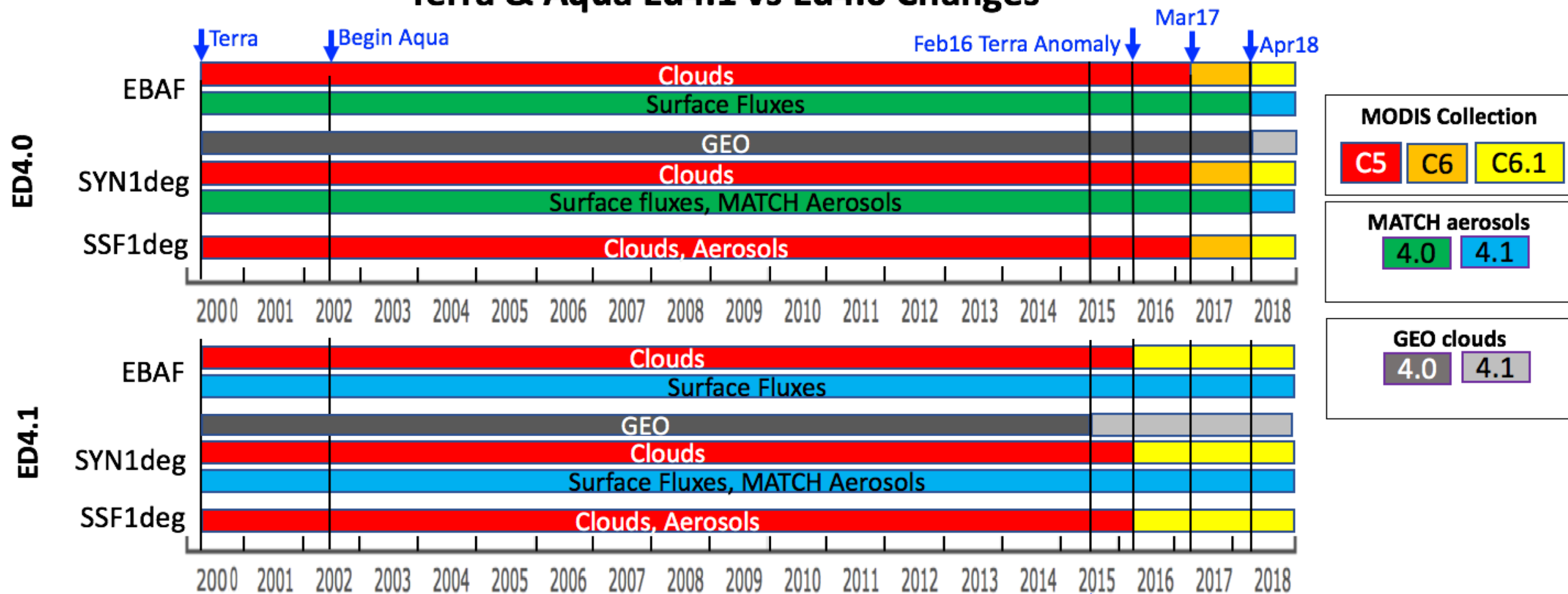


OUTLINE

- TISA: FluxbyCloudType-Monthly Product, Moguo Sun
 - The FluxbyCloudType-hour product has been developed
 - How do we convert to FluxbyCloudType-monthly
- TISA: MODIS to VIIRS Radiometric Scaling Factors, Raj Bhatt
 - MODIS and VIIRS stability
 - VIIRS to MODIS scaling, and scaling between collections and versions
 - GEO calibration



Terra & Aqua Ed4.1 vs Ed4.0 Changes



Parameter	ED4.0	ED4.1
MODIS-collection	Terra-MODIS 6.7, 8.6 μm striping, March 2016 to March 2018	MODIS C6.1 resolved the Terra-MODIS 6.7, 8.6 μm striping
MATCH-Edition	Large discontinuity between MODIS C5 & C6.1 AOD inputs	Uses MODIS C6.1 AODs as input for entire CERES record
MODIS Clouds	Impacted Terra cloud properties	Terra cloud properties corrected beginning in Feb 2016
GEO Clouds	Him-8, GOES-16,17, Met-8,11 cloud codes with bugs	Consistent cloud code using MATCH Ed4.1, begin July 2015
Surface fluxes	The clear-sky SW down surface flux was impacted by MODIS C5 & C6.1 AOD discontinuity	SYN surface fluxes, computed using consistent GEO cloud code with MATCH Ed4.1 and tuned fluxes to correct GEO TOA flux

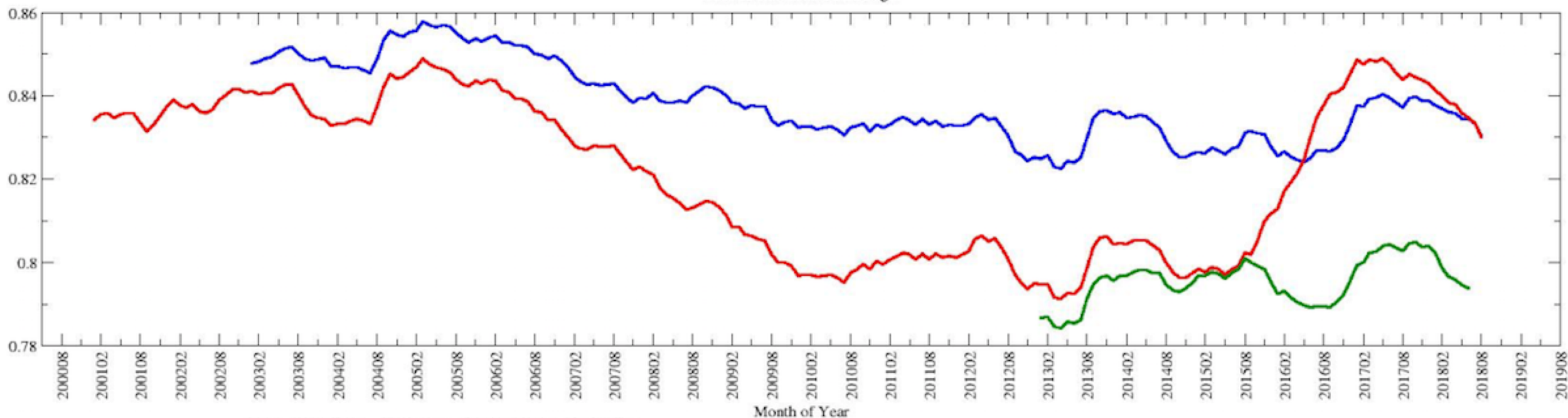
TISA Ed4.1 reprocessing

- The MODIS collection and aerosol version improvements prompted Ed4.1 reprocessing
 - The Terra WV and 8.6 μ m spacecraft anomaly induced cross-talk mitigated
 - MODIS/MATCH C5 and C6 aerosol record now more consistent
 - The Him-8, Met-8, Met-11, GOES-16 processing now made more traceable and greater consistency with MODIS clouds
- CERES Products
 - EBAF TOA fluxes did not change significantly between Ed4 and Ed4.1. Not reprocessed.
 - EBAF clouds, Terra and Aqua day/night clouds reprocessed from March 2016
 - SSF1deg TOA fluxes reprocessed from March 2016 completed and in forward processing mode
 - SYN1deg observed TOA fluxes, no change prior to July 2015. Him-8 (July 2015), Met-8 (Feb 2017), Met-11 (Feb 2018), and GOES-16 (Jan 2018) reprocessed from beginning of records. Uses the SSF1deg from March 2016 reprocessed fluxes
- CERES ordering tool release, cascading rollout
 - EBAF-surface and SYN1deg computed fluxes, reprocessed from beginning of record, to be released in May 2019
 - SYN1deg, SSF1deg, CldTypHist during the summer

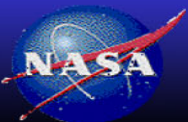
Terra-MODIS night time ocean polar total cloud fraction

Time Series of CloudFraction-Total.Night

Ocean Polar Total Phase Night



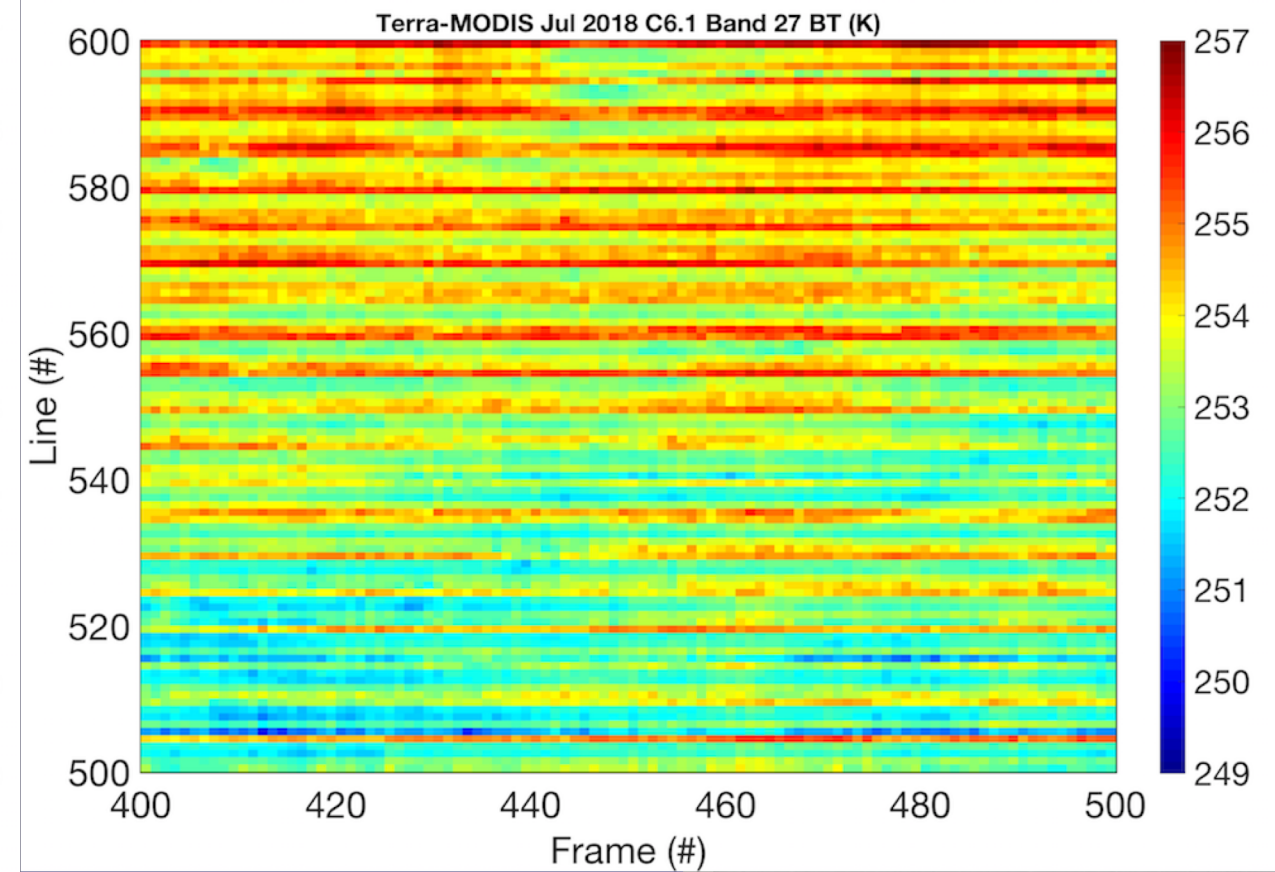
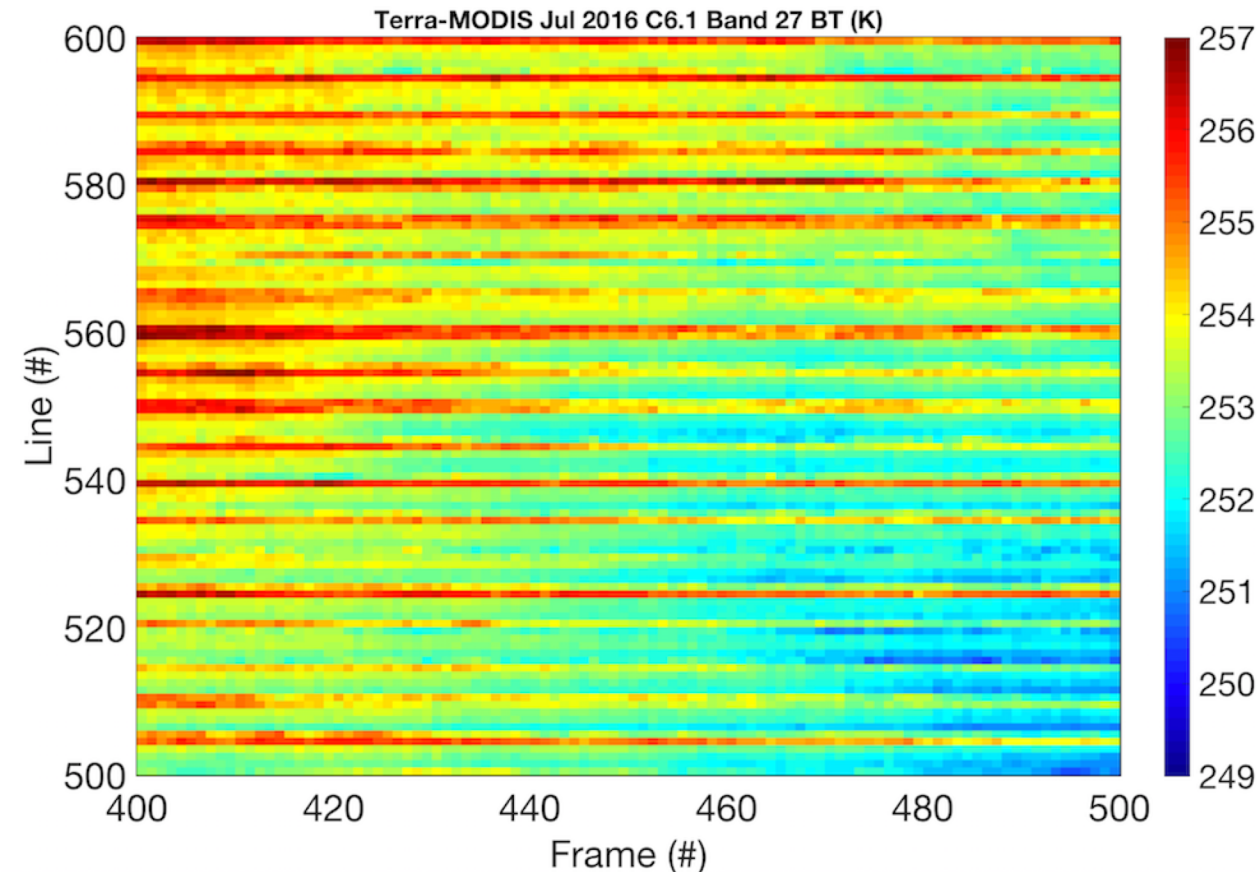
	Slope (%/dec)	SlopeError (%/dec)	Intercept (nu)	InterceptError (nu)	Correlation
AquaEd4	-1.584000	0.096000	0.850498	0.000865	-0.770057
TerraEd4	-1.428000	0.228000	0.834198	0.002371	-0.389209
SNPPEd1A	1.800000	0.360000	0.790734	0.001119	0.532953



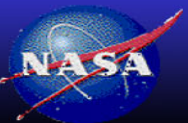
Terra-MODIS C6.1 WV (BT)

July 2016

July 2018



It seems there is more detector noise in 2018



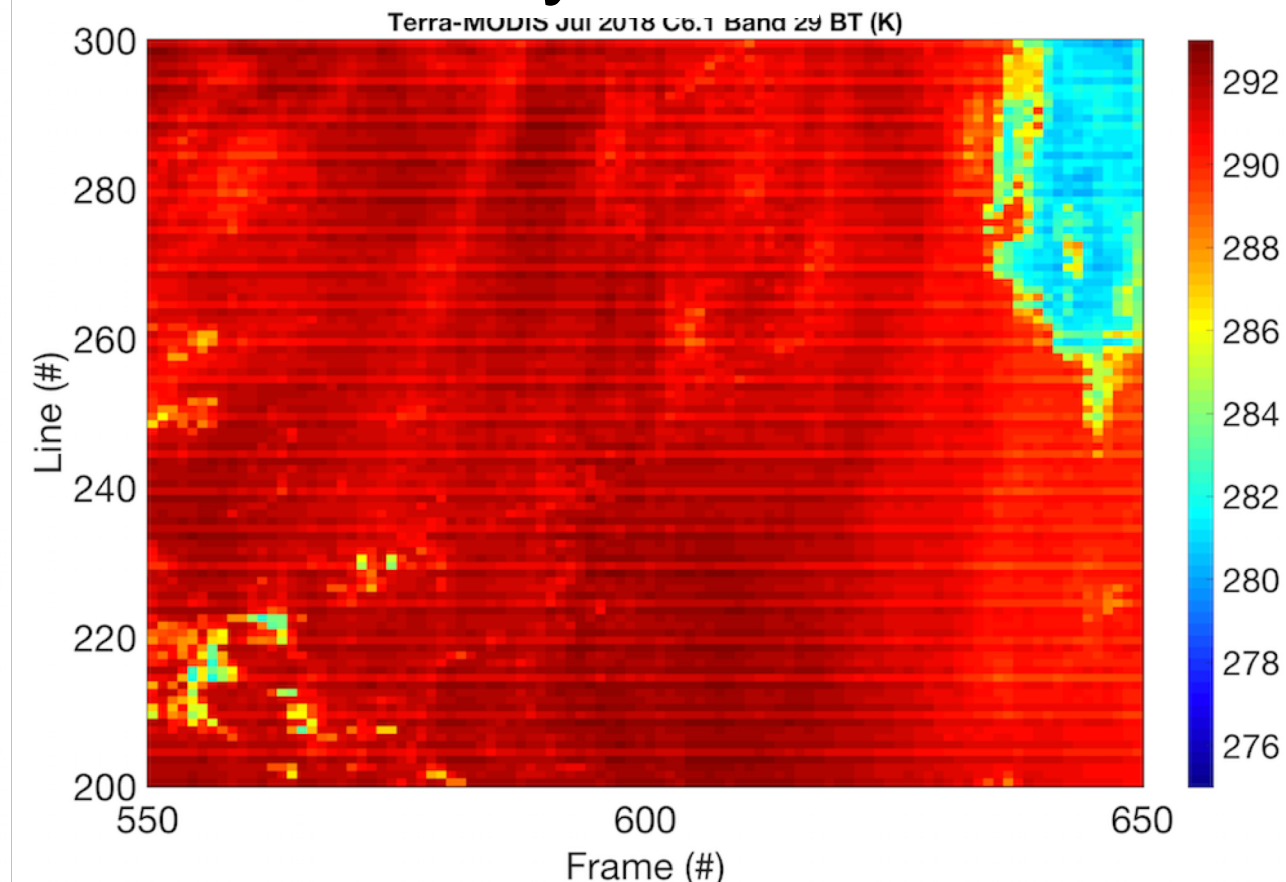
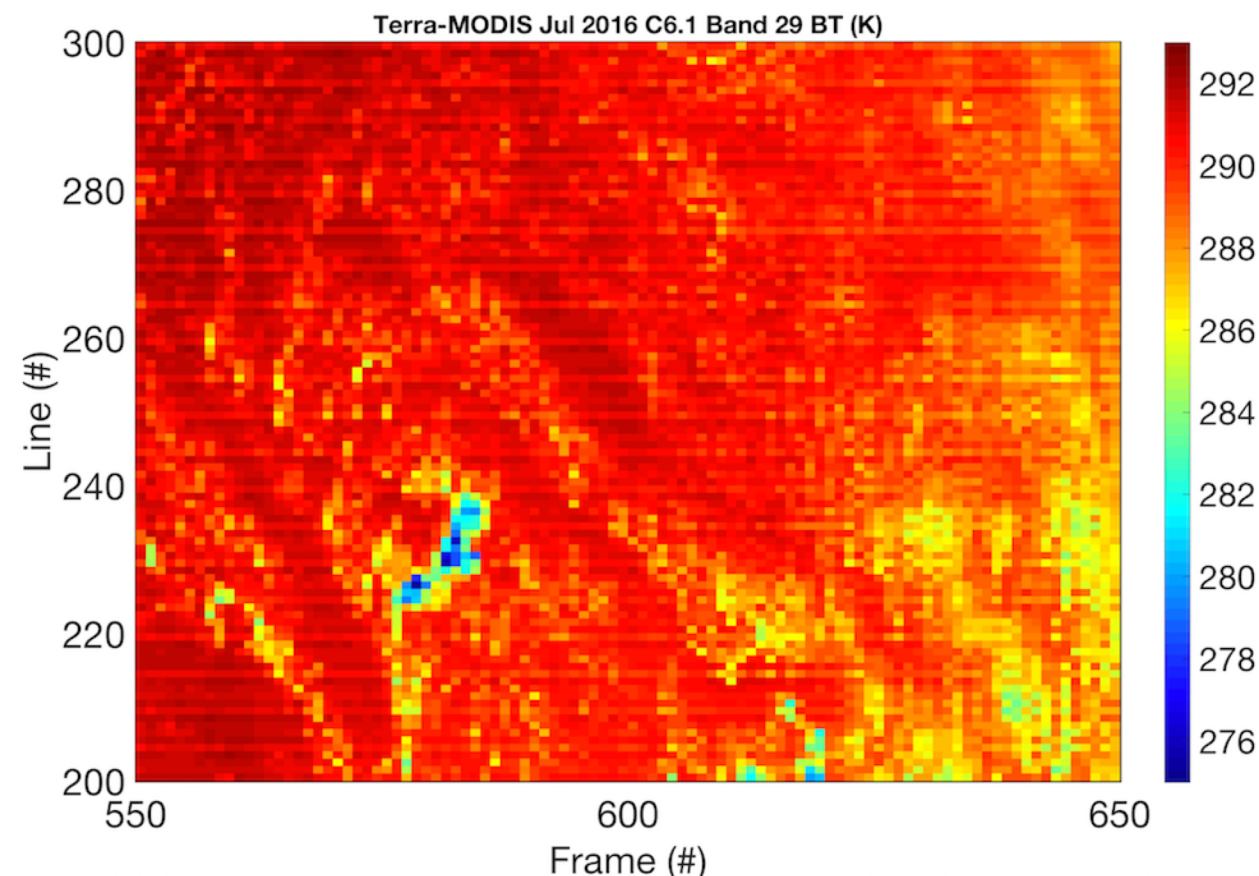
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Terra-MODIS C6.1 8.6 μ m (BT)

July 2016

July 2018



It seems there is more detector noise in 2018



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